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Empowering Engineering Students: Enhancing Learning and Engagement through Outcomes-Based Assessment

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Abstract

This study evaluates the implementation of Outcomes-Based Assessment (OBA) in a first-year core mechanics course across four engineering programs, impacting around 350 students. The course was redesigned to align learning and assessment with specific course outcomes, fostering a more transparent and student-centered approach. The redesigned course emphasized outcomes-based learning, allowing students multiple opportunities to engage with the material and assess their progress toward achieving specific learning outcomes. It helped the instructor identify the areas in which students struggled the most, and it allowed students to understand their areas of improvements. Instead of relying solely on traditional, high-stakes exams, students were evaluated through smaller, targeted assessments designed to measure their understanding of key competencies. This shift not only reduced exam-related stress but also encouraged students to focus on continuous learning and improvement, taking ownership of their educational journey.

For Architectural Engineering students, this approach is particularly relevant as their curriculum requires both theoretical mastery and practical application of mechanics principles in building structures. Unlike other engineering disciplines that may focus more on general mechanics applications, AE students must integrate these concepts with real-world constraints such as material performance, sustainability, and structural integrity. Implementing OBA within this framework allows for a more tailored learning experience that directly aligns with professional competencies in the field.

Introduction and Background

Competency-based assessment (CBA) and outcomes-based assessment (OBA) have become integral in higher education, focusing on students' mastery of specific skills and knowledge rather than time-based metrics. This shift aims to enhance educational quality and ensure graduates are well-prepared for professional demands. [1] emphasize the importance of aligning competency-based education with industry expectations to prepare students for real-world challenges. [2] further discuss the implementation of CBA in engineering programs, providing insights into how competency-based assessments can be effectively integrated into first-year courses.

For Architectural Engineering (AE) students, mastering fundamental mechanics concepts is critical, as these principles serve as the foundation for later coursework in structural analysis, materials science, and building design. Unlike disciplines such as Civil or Mechanical Engineering, which may emphasize mechanics from a more analytical perspective, AE students must apply mechanics within the constraints of architectural design, safety regulations, and sustainability goals. Therefore, aligning OBA with these unique educational needs ensures that AE students can bridge the gap between conceptual understanding and real-world application.

Outcomes-based assessment (OBA) in higher education aims to enhance student learning, engagement, and teaching by focusing on developing key competencies, skills, and knowledge relevant to future careers. It emphasizes outcomes and provides students with practical experience that prepares them to succeed in workplace environments. OBA focuses on evaluating whether students have achieved predetermined learning outcomes, promoting transparency and accountability. [3] highlights that an outcomes-based approach centers on what students know and can do, representing a paradigm shift in educational philosophy. This approach allows for a more standardized and clear method of evaluating educational effectiveness. [4] illustrates how outcomes-based assessment can be used to improve course design and assessment strategies, enhancing overall educational quality. Implementing OBA can lead to significant improvements in teaching and learning practices. [3] critically reviews the outcomes-based approach, emphasizing the necessity for careful implementation to address both practical and philosophical considerations. [5] suggests that systematic assessment of learning outcomes through an outcomes-based framework can guide program improvements and decision-making processes within higher education institutions.

The OBA method was introduced in the United States and the United Kingdom in the late 20th century [6]. It was widely implemented in the medical curriculum, and the abilities expected of medical program graduates at Brown University, as shown in Table 1 [7], are closely related to the purpose of OBA. These abilities focus on skills and application rather than memorization, aligning well with current educational practices that emphasize practical competencies.

Table 1: Nine Expected Abilities of Medical Graduates [7]

1.	Effective communication	6.	Self-awareness, self-care and personal growth
2.	Basic clinical skills	7.	The social and community contexts of healthcare
3.	Using basic science in the practice of medicine	8.	Moral reasoning and clinical ethics
4.	Diagnosis, management and prevention	9.	Problem solving
5.	Lifelong learning		

Despite the benefits, implementing CBA and OBA presents challenges, including the need for faculty development and potential resistance to traditional teaching methods. [8] acknowledges these challenges and discuss how faculty development initiatives can help overcome resistance, ensuring the successful integration of competency-based assessments into curricula. Moreover, the transition to CBA may require changes in institutional culture, assessment practices, and faculty attitudes, as outlined by [9], who examines the complexities of adopting an outcomes-based approach in higher education.

[10] presents a comprehensive review of competency-based assessment in engineering, discussing its implementation and the benefits of such a framework in aligning educational outcomes with industry standards. [11] further explores how the University of Saskatchewan has integrated competency-based assessments within its engineering program, noting the positive impact on student learning and performance. [3] has explored the implementation of outcomes-based assessment in higher education, providing a critical review of its application. [3] examines the challenges and benefits of adopting an outcomes-based approach in university curricula, offering insights into how such frameworks can enhance student learning and institutional effectiveness. [5] has contributed to the development of learning outcomes assessments, particularly with his work on improving academic programs through systematic evaluation. [5] presents a model for improving academic programs by utilizing data-driven decisions based on

the systematic assessment of student learning outcomes, which can significantly improve the alignment between teaching practices and student success.

Competency-based and outcomes-based assessments represent a shift toward more student-centered educational practices in higher education. While they offer significant benefits in aligning education with industry needs and improving student learning outcomes, careful consideration of implementation challenges is essential to ensure their effectiveness. By integrating these frameworks, institutions can foster better student preparation for professional demands and contribute to continuous improvement in higher education. Information provided by [12] also adds to this understanding by discussing the benefits and challenges of adopting competency-based frameworks in higher education.

Methodology

OBA was implemented in first-year mechanics 1 course at the University of Waterloo as detailed by [13]. The course consisted of 1.5 hours of lectures and 1 hour of tutorial each week and was offered to students in four engineering programs: Architectural, Civil, Environmental, and Geological Engineering. It served the purpose of bringing students from different high school backgrounds to the same level of competency in basic mechanics fundamentals such as forces, moments, equilibrium, and free body diagrams.

The Architectural Engineering cohort particularly benefited from the structured approach of OBA, as it allowed them to apply these mechanics concepts more effectively to design problems. The AE curriculum integrates engineering fundamentals with architectural form, making iterative learning cycles crucial for developing a strong understanding of how forces and materials interact in real-world structures. The ability to refine concepts through multiple assessment methods helped AE students transition more smoothly into more advanced coursework involving building performance and safety considerations.

The redesigned mechanics 1 course included four main Intended Learning Outcomes (ILO) and multiple sub-ILOs. As shown in Figure 1, the ILO's and their sub-ILOs were weighed differently. ILOs 1 to 3 were assessed based on four assessment methods: practice assignments (PA), assignments (A), tests, and a final exam. ILO 4 was evaluated in a different way and therefore will not be discussed further in this study.

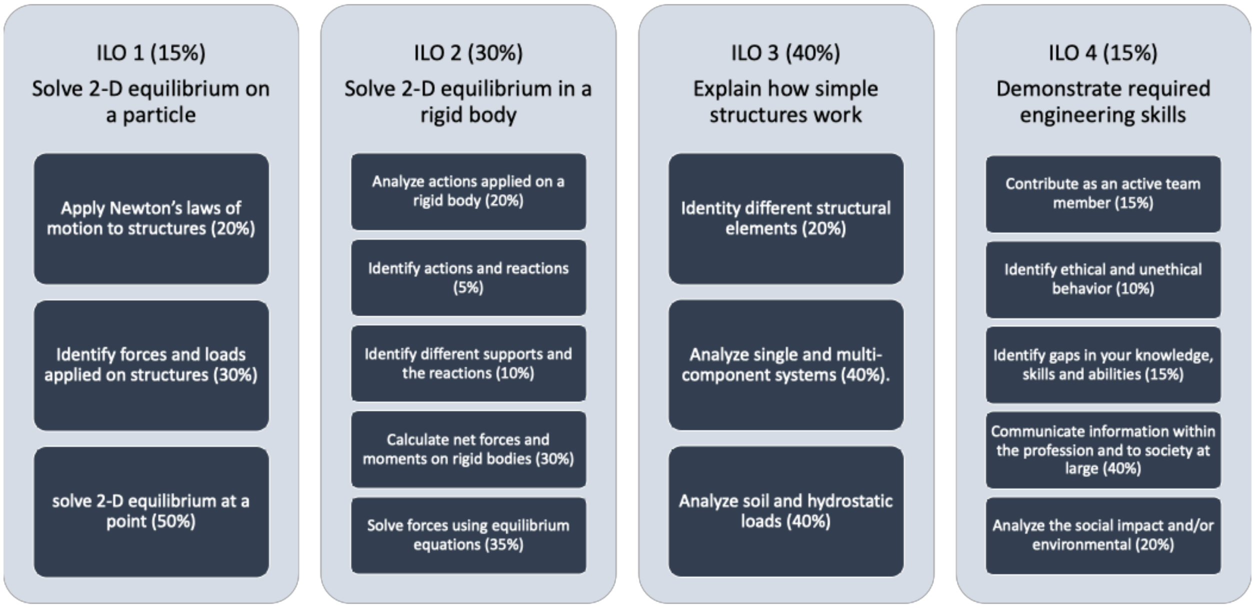

Figure 1: Four Main ILOs of the Course

To assess the impact of OBA on student learning outcomes, a comparison was conducted between student performance before and after the implementation of OBA within the Mechanics 1 course. Table 2 presents key performance metrics before and after the introduction of OBA. As seen in the table the average grade for the cohort increased from 83% to 88%. Note that grades of the final exam before applying OBA was curved by adding 5 points to each student. Even with curving the grades the students still performed worse in general. The OBA implementation allowed students to know where they lack understanding and what to focus on. It also allowed students to be more engaged in Tutorial and in-class discussions.

Table 2: Performance metrics before and after OBA Implementation

Performance Metric	**Before OBA Implementation**	**After OBA Implementation**
Average Course Grade	83% (with curving the final exam)	88%
Pass Rate	100%	100%
Participation in Tutorials and Discussions	Moderate	High (More Engagement)

Survey data indicates that student confidence in applying mechanics concepts increased significantly after OBA implementation, particularly among AE students. Many AE students reported that the iterative nature of the assessments helped them strengthen their understanding of force distributions, moment calculations, and free-body diagrams—critical skills necessary for architectural structure design.

Table 3 shows a summary of the course material and how it was designed within the weeks of the term to help students identify which ILOs are covered in which weeks. The detailed course structure is outlined in Appendix A, showing the details related to timing of the videos and number of PAs and As students completed each week. This appendix was the result of several iterations done by the teaching team while designing the course to ensure the required time from the students (in terms of watching videos and doing PAs and As) was equal each week. Materials for ILO 1 were covered in Week 1, while ILO 2 was addressed from Weeks 2 to 4. During these weeks, students were provided opportunities to complete PAs and graded As. Test 1, which assessed ILOs 1 and 2, was conducted in Week 7. ILO 3 was introduced in Weeks 5 to 11, with students completing PAs and As for the sub-learning outcomes during this period. Test 2 focused exclusively on ILO 3 and took place in Week 12. Finally, the cumulative final examination, conducted during the exam period in Week 13 and covered ILOs 1, 2, and 3.

Table 3: ILO and Sub-ILO Distribution by Week

week #	ILO	Sub-ILO	Topic
1	ILO 1	A	Newton's Law
		B	Identify Forces and Loads
		C	Equilibrium at a Point
2	ILO 2	A	Moment
		B	Action and Reaction
		C	Supports & Their Reactions
3		D	Net Force on 2D Rigid Body
4		E	Force in Equilibrium
5	ILO 3	A	Identify Different Structural Elements
8,9		B	Analyze Single & Multi-Component Systems
10,11		C	Hydrostatic Loads & Soil Loads

The grading scheme was designed in a way that allowing students to create their own learning paths and take the ownership of their learning by having multiple opportunities to improve their grades over the four assessment methods. The weekly PAs, which allowed for unlimited attempts, were worth 10% of the students' overall grade. The PAs were due every Wednesday and completing them with 100% gave students access to the actual assignments. The assignments permitted two attempts and were due every Friday, accounting for an additional 20% of students' overall grade in the specific sub-ILO. If students performed better on the A, the A grade overwrote the PA grade, allowing students to achieve up to 30% of the specific sub-ILO. Similarly, the tests and the final exam allowed students to achieve up to 70% and 100%, respectively, as illustrated in Figure 2. For example, if students did not do the PAs and the As for a specific sub-ILO, while they got 100% on this sub-ILO in the test, their grade would be 70% so far. To get the 100%, they need to achieve a 100% on this sub-ILO in the final exam. If they achieved a lower grade on the final exam, their total grade for this sub-ILO will be the average of the 100% from the test and the grade from the final exam. This average is calculated by weighing the test grade as 70% and the final exam grade as 30% for this sub-ILO.

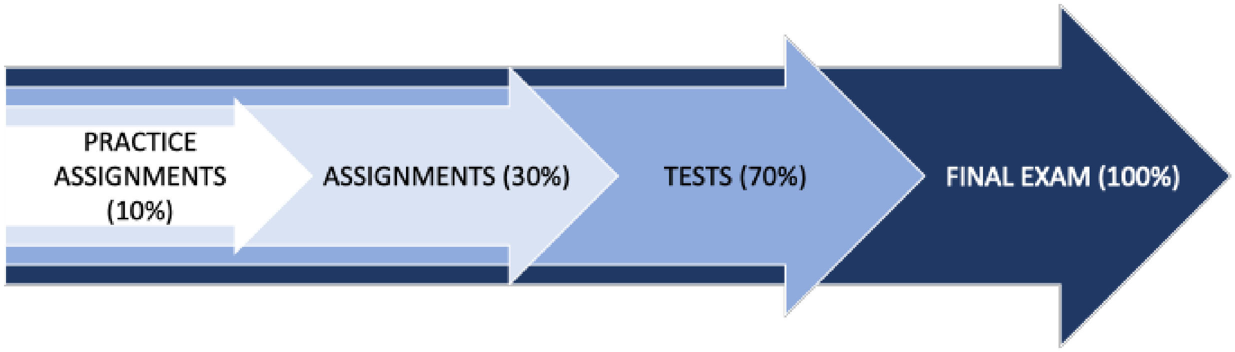

Figure 2: Visual Aid Illustrating the Grading Scheme for Each Sub-ILO for ILOs 1-3

To help students understand better the grading throughout the course, an Excel sheet was provided to allow them to enter their grades as they progress throughout the course and figure out where they're standing. A screenshot of the Excel sheet is shown in Appendix B.

Results

At the end of the term, students were invited to reflect on their learning using the OBA method through an online survey. Out of the 350 students enrolled in the course over the 4 engineering programs, a total of 143 students responded. The survey questions are shown in Appendix C.

Architectural Engineering students specifically noted that having multiple assessment opportunities allowed them to approach problem-solving more methodically, an essential skill in their field. Unlike other engineering students, AE students must often balance structural integrity with architectural form, requiring a nuanced understanding of mechanics principles. The ability to refine and reassess their understanding throughout the term helped reinforce these skills, contributing to higher levels of confidence and competency in applying mechanics concepts to structural design challenges.

Survey results indicated a positive response to the outcomes-based learning approach. As shown in Figure 3, 95% of the students either strongly agreed or agreed that the opportunity for unlimited trials in the practice assignments helped reduce stress and support learning. Academic stress is a common issue many students face which often leads to burnout and significant risk of depression [14]. Students were able to maintain a balanced and positive learning experience by the reduced stress and improve overall mental well-being, ultimately supporting their success in both school and life.

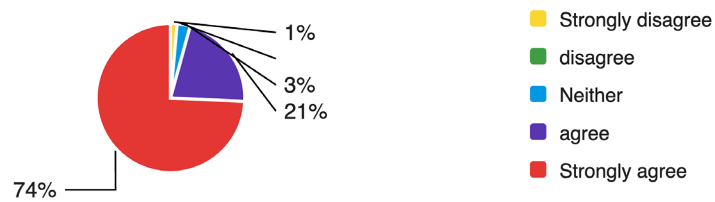

Figure 3: Student Response to Q3. "Did the opportunity for unlimited trials in the practice assignments help reduce stress and support learning?"

Figure 4 shows that 72% of the students found it helpful to have unlimited attempts on the PAs and build their understanding of the ILOs, which allowed them to refresh their memory without having consequences. By providing multiple chances to demonstrate their knowledge, the course structure promoted self-reflection and helped students focus on mastering competencies rather than just passing exams. 77% (Figure 5) of the students either agreed or strongly agreed that the course assessments helped reinforce their understanding of the ILOs, and that the opportunity to improve their grades through multiple assessments motivated them to stay engaged. 92% of them answered the grading system, particularly the ability to replace lower grades with higher grades was fair, which was expected as all students want to achieve the highest grade possible.

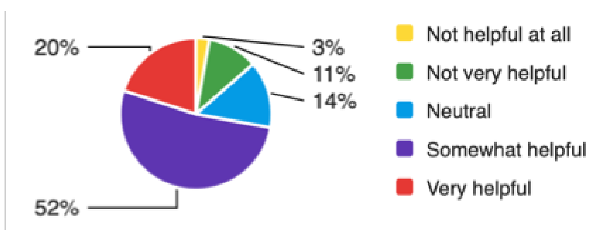

Figure 4: Student Response to Q5. How helpful were the practice assignments in building your understanding of the ILOs?

	Strongly Agree	Agree	Neither	Disagree	Strongly Disagree
Q14. Did the course activities (e.g., practice assignments, tests, final exam) help reinforce your understanding of the ILOs?	14%	60%	15%	7%	3%
Q16. Did the opportunity to improve your grades through multiple assessments motivate you to stay engaged?	33%	44%	17%	5%	1%

Figure 5: Student Response to Questions 14 and 16

Figure 6 shows that the majority (87%) of the students are either very or moderately confident in applying the concepts from the ILOs to real-world scenarios. In general, students agreed or strongly agreed the course helped them achieve the ILOs, as shown in Figure 7. However, on average, 18 more students strongly agreed that the course helped them achieve ILO 1 compared to ILOs 2 or 3. This result was anticipated due to the nature of the course structure. As students progressed through the course, the complexity of ILOs increased with ILO 1 being the simplest concept which made it easier for students to achieve.

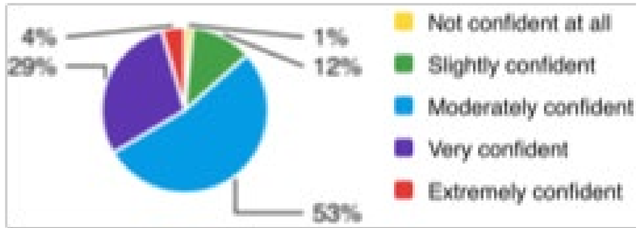

Figure 6: Student Response to Q13. How confident are you in applying the concepts from the ILOs to real-world scenarios?

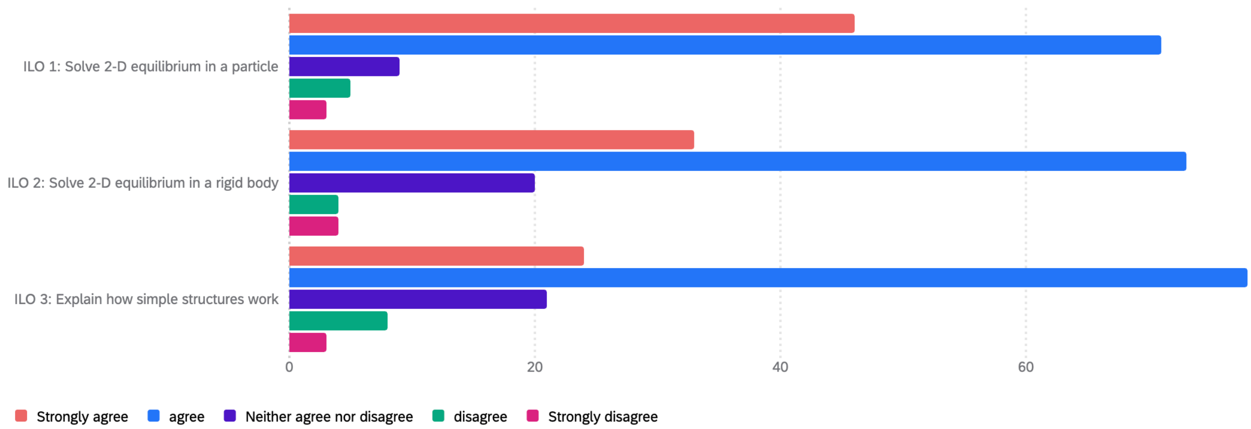

Figure 7: Student Response to Q12. To what extent do you feel the course helped you achieve the following ILOs?

68% of the students indicated that the tests supported their understanding and ability to focus on areas for improvement, while 20% remained neutral. However, 12% felt the tests did not provide much support much or any at all. This suggests the need for a follow up question and gather further opinions on why they thought the tests were not helpful.

While half of the students found the OBA approach better than the traditional assessment methods, 25% students found it about the same and 25% of the students found it worse. One challenge the students reported as particularly confusing in common was understanding the grading framework used in the course. The grading scheme was explained in an adequate number of ways, including a PowerPoint presentation and a grading calculator Excel sheet to help students track their progress. Despite the instructor's effort to communicate the grading scheme with the students, students still expressed difficulty understanding how their final grades would be determined. While this grading scheme allowed students to achieve a passing grade or even a 100% without completing every assessment, students were unsure what their final grade was going to be. As a next step, it is important for the instructor to develop a gradebook on the Brightspace flatform with real-time updates on their grades throughout the course, instead of having students to wait until the end to figure out where they are standing.

Conclusion

In conclusion, this study demonstrates the effectiveness of outcomes-based assessment in improving student learning and engagement, particularly in engineering programs where technical competencies are critical for future success. By aligning course design and assessments with defined learning outcomes, students were better able to understand their progress, engage more deeply with the material, and take ownership of their learning. Allowing students to take their own path of learning and having multiple grading frameworks is effective for reducing exam-related stress, ultimately improving students' mental health. While communicating the method which is new to many students can be difficult, this approach promotes a more transparent, engaging, and student-centered educational experience, providing a model that can be applied across other disciplines.

Future Work

Future work is needed to clarify the grading framework and avoid students' confusion. More intuitive method of communication will be necessary in the future to ensure that all students feel clear and confident about how their final grade will be determined. It will help students to better understand the framework if CBA become widely implemented and they are exposed more to it.

Some of the survey questions will benefit from a follow-up questions, for example why the students thought the OBA approach was worse compared to the traditional assessment methods. Identifying what the students did not find helpful in the course will help the instructor to develop a solution for the future iteration.

Future research direction include the following:

- Further longitudinal studies tracking the impact of OBA on student performance across multiple years.
- Comparing student outcomes in Architectural Engineering with other engineering disciplines to assess cross-disciplinary effectiveness.
- Developing a digital grading system that provides real-time performance tracking.

References

1. N. S. Madonsela, "Aligning Education and Workforce Training with Industry Needs: A perspective of Human Capital Development," *Proceedings of the First Australian International Conference on Industrial Engineering and Operations Management*, Sydney, Australia, Dec. 20-21, 2022.
2. S. Huang, M. Hill, A. Stickwood, P. Fredlund, and S. Maw, "Implementing Competency Based Assessment (CBA) in a First Year Engineering Program," *Proceedings of the Canadian Engineering Education Association (CEEA)*, vol. 2023, no. 74, pp. 1-9, Jun. 2023.
3. M. Tam, "Outcomes-based approach to quality assessment and curriculum improvement in higher education," *Educational Research and Reviews*, vol. 9, no. 21, pp. 1106-1114, Nov. 2014.
4. S. Nakhornsri, "From Classroom to Real World: Application of Outcomes-Based Assessment in English Courses," *PASAA: Journal of Language Teaching and Learning in Thailand*, vol. 58, pp. 123-150, Nov. 2019.
5. K. Fulcher, M. Good, and A. Coleman, "A Simple Model for Learning Improvement: Weigh Pig, Feed Pig, Weigh Pig," *Occasional Paper #23*, National Institute for Learning Outcomes Assessment, 2014.

6. M. Davis, "Outcomes-based education: History, philosophy, and practice," *Educational Researcher*, vol. 32, no. 2, pp. 21-30, Mar. 2003.
7. S. R. Smith, "AMEE Guide No. 14 Outcome-Based Education Part 2-Planning, Implementing and Evaluating a Competency-Based Curriculum," *Medical Teacher*, vol. 21, no. 2, pp. 164-170, 1999.
8. B. Frank, K. Moozeh, and S. Maw, "A systematic Review of Drivers and Barriers to Competency-Based Undergraduate Engineering Education," *Proceedings of the Canadian Engineering Education Association (CEEA-ACEE) Conference*, June 19-2022, 2023, Kelowna, BC. 2023, Paper 155.
9. H. Lurie and R. Garrett, "Deconstructing Competency-Based Education: An Assessment of Institutional Activity, Goals, and Challenges in Higher Education," Competency-Based Education, vol. 2, no. 1, pp. e01047, 2017
10. S. Maw, S. Huang, D. Cree, G. Kennell, and W. James, "Lessons Learned from using Competency Based Assessment (CBA) in a First Year Engineering Statics Course," *Proceedings of the Canadian Engineering Education Association (CEEA-ACEE) Conference*, June 21 – 23, 2021 Charlottetown PE. 2021, Paper 148.
11. J. B. Frey, S. Maw, S. Bens, J. Bugg, and B. Sparling, "Design of a Completely New First Year Engineering Program at the University of Saskatchewan – Part II," *Proceedings of the Canadian Engineering Education Association (CEEA-ACEE) Conference*, June 9-12, 2019 Ottawa, ON. 2019, Paper 116.
12. OpenAI, "Competency-Based Assessment in Higher Education," personal communication, Jan. 2025.
13. R. Al-Hammoud, “Course redesign using competency-based assessment framework,” *Conference Proceedings 2024 Canadian Engineering Education Association (CEEA-ACÉG24)*, Paper 74, Edmonton, AB, Canada, June 15-19, 2024
14. Y. Deng, J. Cherian, N. U. N. Khan, et al., "Family and academic stress and their impact on students' depression level and academic performance," Front Psychiatry, vol. 13, p. 869337, Jun. 2022, doi: 10.3389/fpsyt.2022.869337.

Appendix A: Mechanics 1 Course Structure

Week	Weekly Video Lecture Time (min)	# of PA	# of A	ILO	Sub-ILOs	Sub Learning Outcome	Video Lecture Time (min)
1	26	1	1	ILO 1 15%	Apply Newton's laws of motion to structure (20%)	Motivation	4
						Actions and Reactions	5
					Identify forces and loads applied on structures (30%)	Forces	3
						Characterizing Loads	4
					Solve equilibrium at a point (50%)	Equilibrium at a Point	10
2	40	2	2	ILO 2 30%	Analyze moment on a rigid body (20%)	Moments (Pt.1)	4
						Moments (Pt.2)	9
						Moments (Pt.3)	5
						Calculating Moments Extra Help	4
					Identify actions and reactions (5%)	Actions and Reactions	6
					Identify different supports and the reactions associated with them (10%)	Supports	6
						Free Body Motions	5
						Connections Between Members	1
3	42	1	1		Calculate net force on a 2D rigid body using FBD and equilibrium equations (30%)	Equations of Equilibrium	2
						Free body Diagrams	9
						Equivalent Loads	9
						Shifting the Position of a Force	10
						Shifting the Position of a Moment	3
						Breaking a System into Pieces	9
4	14	1	1		Analyze force in equilibrium (35%)	Equilibrium of a two-force body	4
						Equilibrium of a three-force body	10
5	19	1	1	ILO 3 40%	Identify different structural elements (20%)	Beams and Columns	4
						Braces and Structural Framing	5
						Cables, Chains, and Arches	3
						Plates and Shells	4
						Representing Structures	3
6					Reading week		
7					Midterms		
8	35	1	1		Analyze single and multi-component systems (40%)	How to Approach Structural Analysis	2
						Bent Roof Truss Example	9
						Wheelbarrow Example	6
						Dam Example	4
						Log Cradle Example	4
9	40	1	1			Tunnel Shoring Example	10
						Cable-Stayed Roof Example	6
						Roof Frame Example	6
						Dump Truck Example	8
						Integrative Analysis	10
10	6	1	1		Analyze soil and hydrostatic load (40%)	Hydrostatic Loads	6
11	23					Soil Loads	3
						*Lecture Problems to be completed beforehand	20

Appendix B: Grading Calculator Excel Sheet

Enter your results as the percentage grade (i.e. 85%)						
	ILO 1	A			Component Weight	
	Grade	% of sub-ILO Achieved	Grade Redistribution from CBA Model		PA	10.00%
Practice Assignments		0.00%			A	30.00%
Assignments		0.00%	0.00%		Test	70.00%
Test 1		0.00%	0.00%		Final	100.00%
Final		0.00%	0.00%			
Final Grade	0.00%	0.000%			Sub-ILO Weight	
					A	20.00%
	ILO 1	B			B	30.00%
	Grade	% of sub-ILO Achieved	Grade Redistribution from CBA Model		C	50.00%
Practice Assignments		0.00%				
Assignments		0.00%	0.00%			
Test 1		0.00%	0.00%			
Final		0.00%	0.00%			
Final Grade	0.00%	0.000%				
	ILO 1	C				
	Grade	% of sub-ILO Achieved	Grade Redistribution from CBA Model			
Practice Assignments		#REF!				
Assignments		0.00%	0.00%			
Test 1		0.00%	0.00%			
Final		0.00%	0.00%			
Final Grade	0.00%	0.000%				
ILO 1 FINAL GRADE		0.00%		0.00%		

Appendix C: End of Term Survey Questions

Q1.	Please select your program from the following list of options.
Q2.	Have you taken similar mechanics/physics courses before that were assessed using traditional methods?
Q3.	How would you describe your previous understanding of the concepts covered in this course
Q4.	How effective were the weekly resources and videos in preparing you for the lectures?
Q5.	How helpful were the practice assignments in building your understanding of the ILOs?
Q6.	Did the opportunity for unlimited trials in the practice assignments help reduce stress and support learning?
Q7.	Was the progression from practice assignments to graded assignments (10%, 30%, etc.) clear and logical?
Q8.	How clear was the grading system (e.g., ability to achieve up to 100% in an ILO through progressive assessments)?
Q9.	How fair do you think the grading system was, particularly the ability to replace lower grades with higher ones?
Q10.	To what extent did the assignments, term tests, and final exam adequately assess your mastery of the ILOs?
Q11.	How did the term tests (linked to specific ILOs) support your understanding and ability to focus on areas for improvement?
Q12.	To what extent do you feel the course helped you achieve the following Intended Learning Outcomes (ILOs)?
Q13.	How confident are you in applying the concepts from the ILOs to real-world scenarios?
Q14.	Did the course activities (e.g., practice assignments, tests, final exam) help reinforce your understanding of the ILOs?
Q15.	How would you compare your experience in this course with traditional assessment methods?
Q16.	Did the opportunity to improve your grades through multiple assessments motivate you to stay engaged?
Q17.	Did the averaging of grades in lower-performance scenarios help reduce pressure while maintaining accountability?
Q18.	What aspects of the course design or assessment method did you find most beneficial, and why?
Q19.	Were there any challenges you faced with the outcomes-based assessment model? If yes, please elaborate.
Q20.	How would you suggest improving the course or its assessment methods for future iterations?
Q21.	Please indicate your gender identity (check all that apply).
Q22.	Please select the groups with which you identify (check all that apply).